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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,077	02/09/2001	James L. Holloway	00-18	7482

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EXAMINER	
SAOUD, CHRISTINE J	
ART UNIT	**PAPER NUMBER**
1647	

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/781,077	HOLLOWAY ET AL.	
	Examiner	Art Unit	
	Christine J. Saoud	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *18 June 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *37-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *37-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Claims 31-36 have been cancelled and claims 37-56 have been added as requested in the amendment of 18 June 2003. Claims 37-56 are pending in the instant application.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Any objection or rejection of record which is not expressly repeated in this action has been overcome by Applicant's response and withdrawn.

Applicant's arguments filed 18 June 2003 have been fully considered but they are not deemed to be persuasive.

Claim Rejections - 35 USC § 101

Claims 37-56 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to an invention with no apparent or disclosed specific and substantial credible utility, for the reasons of record as applied to claims 31-36 in the Office Action mailed 19 December 2002.

Applicant traverses the rejection and asserts that "[s]tructural similarity with a compound that has a known therapeutic or pharmacological uritlity is routinely found to be indicative of a well-established utility and supportive of an

assertion of therapeutic utility for a similar compound". However, Applicant failed to continue reading MPEP 2107.03 which also indicates that in *In re Jolles,* "the claimed compounds were found to have utility based on a finding of a close structural relationship" and "shared pharmacological activity" with the known compounds. Evidence of "close" structural similarity with the known compounds was presented in conjunction with "evidence demonstrating substantial activity of the claimed compounds in animals customarily employed for screening anticancer agents". The facts of the instant application are very different from those presented in *In re Jolles*. As pointed out in the previous Office action, the claimed protein shows similarity to both insulin and relaxin and no evidence for a particular biological activity has been provided. MPEP 2107.03 indicates that appropriate weight should be given to evidence presented in determining whether one skilled in the art would find the asserted utility credible. Additionally, the examiner "should evaluate not only the existence of the structural relationship, but also the reasoning used by the applicant or a declarant to explain why that structural similarity is believed to be relevant" to the assertion of utility. The previous Office Action followed these requirements. The instant situation is more directly related to that which was addressed in *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct, 1966), in which a novel compound which was structurally analogous to other compounds which were known to possess anti-cancer activity was alleged to be potentially useful as an anti-tumor agent in the absence of evidence supporting this utility. The court expressed the opinion that all chemical compounds are useful to the chemical arts when this term is

given its broadest interpretation. However, the court held that this broad interpretation was not the intended definition of useful as it appears in 35 U.S.C. 101, which requires that an invention must have either an immediately obvious or fully disclosed real world utility.

Applicant argues at page 13 of the response that the Office has not established a prima facie showing of lack of utility, nor provided sound scientific reasoning to rebut the assertion of utility in the application. The Examiner disagrees and relies on pages 4-6 of the previous Office action, which provides a detailed explanation based on scientific reasoning for finding a lack of utility for the claimed invention. Applicant is basically relying on the structural relationship of the claimed protein to relaxin as a basis for establishing a utility; in other words, Applicant is asserting a well-established utility for the relaxin superfamily. However, as stated in the previous Office action, the insulin/relaxin protein family is divergent in function and therefore, there is no well-established utility for the family members based on amino acid sequence identity alone. The biological activities of insulin are very different from those of relaxin (see Straus, Endocrine Rev. 5(2): 356-369, 1984 and Bryant-Greenwood et al., Endocrine Rev. 15(1): 5-26, 1994), although the proteins are clearly of similar structure (see Bryant-Greenwood, Endocrine Rev. 3(1): 62-90, 1982). A sequence comparison of the claimed protein reveals approximately 50% amino acid identity to both insulin and relaxin family members (percentages differ depending on the protein of the family). Therefore, there is as much structural similarity to insulin as there is to relaxin, and one of ordinary skill in the art would not know if the biological

activities of relaxin or insulin will be possessed, or if the protein will have its own distinct biological activity.

Applicant asserts that the claimed protein contains a motif which is essential for relaxin receptor binding and therefore, the claimed protein would be expected to possess relaxin's biological functions (see page 13 of the response). However, this motif alone would not permit one of ordinary skill in the art to conclude anything specific or substantial about the claimed protein's biological activity. Many protein may share receptor binding regions, but proteins which are agonists and antagonists of the same receptor frequently share receptor binding motifs. There is no evidence presented in the instant specification that the claimed protein binds and activates the relaxin receptor. There is no evidence presented in the instant specification that the claimed protein shares any activities with relaxin. Evidence and sound scientific reasoning has been presented to the contrary as to why the skilled artisan would not reasonable conclude that the claimed protein would possess the activity of relaxin based solely on the structural information provided by the amino acid sequence of the claimed protein.

The instant specification asserts that the claimed polypeptide may be used for pregnancy support (page 42 of the specification, for enhancing fertilization during assisted reproduction (page 42), for treating reproductive disorders (page 43), for treatment of disorders associated with gonadal development, pregnancy, pubertal changes, menopause, ovarian cancer, fertility, ovarian function, polycystic ovarian syndrome and other reproductive functions,

modulation/treatment/prevention of pathological conditions in ovary, as well as suppression or control of ovulation for birth control (page 43, paragraph 2-3). The specification further asserts use of the claimed invention for diagnostic methods to analyze reproductive function or evaluation of ovarian cancer (page 43, bottom). Additionally, the specification asserts that the claimed polypeptide may modulate contractility in certain tissues and may be use for treatment of cardiovascular disease, infertility, *in vitro* fertilization, birth control, treating impotence or other male reproductive dysfunction, as well as inducing birth (see page 44, paragraph 1). These asserted utilities are not substantial at the time the instant application was filed because no biological activity for the claimed protein can be implied or assumed based on the sole disclosure of amino acid sequence similarity to relaxin for the reasons provided above.

There is absolutely no evidence of record or any line of reasoning that would support the asserted uses or biological activities asserted in the instant specification. Furthermore, there is absolutely no evidence of record or any line of reasoning that would support a conclusion that the claimed polypeptide and compositions can be used in any method of treatment as implied in the specification, because it is not known what conditions/disorders/diseases would be responsive to the claimed invention, if any, because no biological activity has been disclosed for the claimed invention. Until some actual and specific significance can be attributed to the claimed protein of SEQ ID NO:2, the instant invention is incomplete. The disclosure that the claimed invention shares sequence similarity with relaxin and insulin is not a disclosure of how to use the claimed invention because the proteins which the claimed invention is related to have distinct

biological activities and could not be used in the same manner. Furthermore, the biological activity or significance of the claimed invention cannot be predicted based on amino acid sequence information alone because the class of compounds to which the instant invention is related has divergent biological activities. In the absence of a knowledge of the biological activity or significance of the claimed invention, there is no immediately obvious patentable use for it. To employ the polypeptide of the instant invention in any of the disclosed methods would clearly be using it as the object of further research which has been determined by the courts to be a utility which, alone, does not support patentability. Since the instant specification does not disclose a credible real world use for claimed polypeptide and compositions thereof, then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. 101 as being useful.

Claims 37-56 are rejected under 35 U.S.C. 112, first paragraph, as failing to adequately teach how to use the instant invention for those reasons given above with regard to the rejection of these claims under 35 U.S.C. 101.

Conclusion

No claim is allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine J. Saoud whose telephone number is 571-272-0891. The examiner can normally be reached on mttr, 8:00-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz can be reached on 571-272-0887. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CHRISTINE J. SAOUD
PRIMARY EXAMINER

Christine J. Saoud